

ADDITIONAL FEE

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R E M A R K S

This Amendment is being filed, following submission of a Request for Continued Examination (RCE), to amend claims 1 and 27 (the only independent claims in this application, to add a new claim 28 (dependent from claim 13) and to provide comments on the prior art of record, prior to further examination of the application.

Independent claims 1 and 27 have been amended to recite that the coil of an electromagnetic actuator,

"which is negatively biased in the first position, is acted upon with a positive current pulse and, due to the differently oriented magnetic fields of the pairs of first and second permanent magnets, performs the rotational movement about the shaft so that the rotational movement of the coil effects an actuating operation for sorting out a piece of material."

This addition finds support in Fig. 4 of this application and in the description thereof in the specification, paragraphs [0038] to [0043] of the specification [US2007/0102325]. Paragraphs [0042] and [0043], in particular, read as follows:

"[0042] To actuate the electromagnetic actuator, the coil 10, which is negatively biased in the basic position shown in FIG. 4, is acted upon with a positive current pulse, whereby due to the differently oriented magnetic fields of the pairs of first and second permanent magnets 8, 9 it performs a movement from the pair of first permanent magnets 8 to the pair of second permanent magnets 9. Due to this movement the carrier 11 is pivoted together with the plate 15 held thereon, so that the plate 15 is inclined. To return the electromagnetic actuator and the plate 15, respectively, into the basic position, the polarity of the current supplied to the coil 10 is reversed, so that, due to the reversed current direction in the coil, it is again returned into the basic position shown in FIG. 4.

"[0043] The following should be noted with respect to the electrical supply of the actuator, as shown in FIG. 4. These remarks are also applicable to the other embodiments as shown in the figures described hereinafter. The coil is preferably negatively biased in the basic position, i.e. between the pair of first permanent magnets 8. Switching off the negative voltage and simultaneous switching on of the positive voltage causes a rotational movement to the end position that is as fast as possible (if two pairs of permanent magnets are used). A return movement is again accomplished by switching from positive to negative voltage. Due to the power action over time, the coil can be subjected to considerably greater loads for a short period of time, for example when the actuator is used for a sorting process. There are no resilient counterforces. In connection with the great drive forces, the small moved mass of the actuator, the absence of resilient counterforces and the increase in the spring coil current for a short period of time, a very rapid change in the position of the plate 15 is accomplished."

As noted above, the negative bias voltage in the basic position, and then the switching off of the negative voltage

and the switching on of the positive voltage, effect a rotational movement that is extremely rapid. The same is true for the return movement by switching over from the positive to negative voltage. As a result, the coil can be subjected greater loads for a short period of time.

No resilient counterforces, for example forces generated by corresponding springs, are required.

Applicants call the Examiner's attention to the fact that the device according to the invention is commercially in use with great success. This device, which is shown on the home page of assignee Eriez, generates high loads on the paddles.

Attached to this Amendment is a copy of this home page entitled "ProSort Airless Metal Recovery Systems" of web site:

[http://www.eriez.com/Products/MagneticSeparators/ProSort/?utma=1.329402544.1285939588.1285939588.1285939588.1&utmb=1.11.10.1285939588&utmc=1&utmz=1.1285940720.1.2.utmcsr=google|utmccn=\(organic\)|utmcmd=organic|utmctr=eriez&utmv=-&utmk=2412848](http://www.eriez.com/Products/MagneticSeparators/ProSort/?utma=1.329402544.1285939588.1285939588.1285939588.1&utmb=1.11.10.1285939588&utmc=1&utmz=1.1285940720.1.2.utmcsr=google|utmccn=(organic)|utmcmd=organic|utmctr=eriez&utmv=-&utmk=2412848)

Corresponding videos may be viewed from the home page of the second assignee, Sulp.

Attached to this Amendment is a copy of this home page of the assignee's web site:

[http://www.sulpro.de/de/sulp\\_mesort.php](http://www.sulpro.de/de/sulp_mesort.php)

Two videos may be viewed from this site by clicking on "Mesort im Einsatz" and "Mesort: Sortieren aller Metalle oder nur Edelstahl."

From both videos it can be seen that the device for sorting different materials, according to the invention, works very well in the rough environment of metal scrap. It can also be seen that the devices (electromagnetic actuators) with the paddles are not comparable with the magnetic devices that are used in hard disk drives as described in Rahimi. Furthermore it is apparent that it is not possible to use the yarn guides disclosed in Hermanns.

A person skilled in the art, starting with the device according to Carlow, would not come to the device as now recited in the independent claims 1 and 27. This is especially the case with respect to the amended independent claims because these claims now define how the coils are operated, with switching over between negative and positive current pulses.

New claim 28 finds support in Figs. 5 and 6.

In the final Office Action issued on February 24, 2010, all the claims of this application were again rejected under 35 USC §103 as being unpatentable over three of the following four references:

U.S. Patent No. 4,561,545 to Carlow for a "Sorting Conveyor";

U.S. Patent No. 5,167,141 to Carrara for a "Seal Withdrawal and Testing Device";

U.S. Patent No. 6,311,919 to Hermanns et al. for a "Yarn Guide..."; and

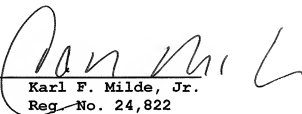
U.S. Patent No. 5,621,591 to Rahimi et al. for a "Dual Coil Voice Coil Motor."

Claims 1 and 3-25 have been rejected over Carlow, Hermanns et al. and Rahimi et al. Claims 1, 2, 5-22 and 27 have been rejected over Carrara, Hermanns et al. and Rahimi et al. As they may apply to claims 1-28, as amended, these rejections are respectfully traversed for the reasons given above.

Accordingly, it is believed that independent claims 1 and 27, as now amended, distinguish patentably over all of the references of record. Since all of the remaining claims of this application are dependent, either directly or indirectly, from claim 1, this application is believed to be

in condition for immediate allowance. A formal Notice of Allowance is accordingly respectfully solicited.

Respectfully submitted,

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## ProSort Airless Metal Recovery Systems

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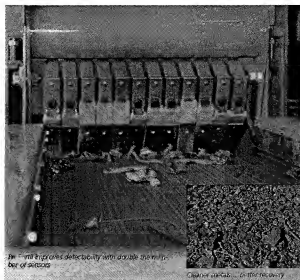
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Ideal for scrap processors, the new airless **ProSort II** doubles the number of metal sensors found on the original **ProSort** machine and positions them on one-inch centers. These high resolution sensors are aligned with a new inverted padd mechanism to improve recovery of valuable metals. This new arrangement improves large and small metallic recovery while producing a "cleaner" fraction.

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- NO AIR compressor plant required
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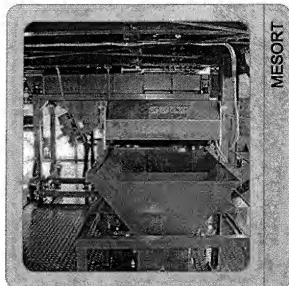
Sie haben Metall in einem Stoffstrom in den es nicht hineingeht? Trotz Wirbelstromabscheider finden Sie noch immer Edelstahl, verschiedene Messing-, Blei-, Zink- oder andere Metallstücke in nicht unerheblichen Anteilen? Oder diese Metalle stören Ihren nachgeschalteten Prozess. Dieses Metall möchten Sie gerne aus diesem Stoffstrom ausschleusen.

Wir haben für Sie die Lösung! Unser einzigartiges, patentiertes Klappensystem (Flipper) zur automatischen Metallkläubung, kombiniert mit einer hoch empfindlichen Sensorik ergibt die MESORT®. Bei einem geringst möglichen Kosten und Energieeinsatz erreichen Sie mit unserem Metallsortierer Typ MESORT® ein optimales Sortierringes. Die MESORT® zur vollautomatischen Sortierung gibt es in den Standardbreiten 800mm, 1200mm, 1600mm sowie 2000mm. Die Maschinenlänge und -Höhe ist variabel und wird Ihren Bedingungen entsprechend gefertigt. Die Zuführung des Materials erfolgt in aller Regel mittels Vibrationsförderrinne, die entweder in Längsrichtung oder quer angeordnet werden kann. Die Sortierleistungen betragen je nach Anwendungsfall und Maschinenbreite zwischen 2t/h – 15t/h.

Sollte trotz der robusten Technik einmal ein Sensor oder eine Klappe ausfallen, kein Problem innerhalb kürzester Zeit sind diese wechselbar. Auch der Bandwechsel gestaltet sich dank unseres Klappmechanismus sehr einfach und schnell.

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- ⊗ Sehr schnelles System, daher hohe Durchsätze
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